BEST AVAILABLE COPY

Serial No.: 10/625,002

PD020069

RECEIVED
CENTRAL FAX CENTER
FEB 28 2007

Remarks

In view of the above amendments to the claims and the following discussion, the applicants submit that the claims now pending in the application are not anticipated under the provisions of 35 U. S. .C. § 102, or obvious under the provisions of 35 U. S. C. § 103. Thus, the applicants believe that all of these claims are in allowable form.

REJECTIONS

A. 35 U. S. C. § 102

1. Claims 1, 3, 6, 11/1, 11/3 and 11/6 are not anticipated by Ko et al.

Claims 1, 3, 6, 11/1, 11/3 and 11/6 stand rejected under 35 U. S. C. § 102(e) as being anticipated by Ko et al. (U. S. Patent 6,671,238 issued December 30, 2003). The applicants submit that these claims are not anticipated by this reference.

Claim 1 is directed to a method for detecting a wobble signal of an optical disk (*see*, specification at page 1, lines 6-9). In the method, a reference signal corresponding in phase and frequency to the desired wobble signal is generated (by the PLL circuit 212) and then an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal (*see*, FIG. 2 and the specification at page 2, lines 23-27) and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal (*see*, FIG. 2 and the specification at page 2, lines 27-29). The comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the

PAGE 11/19 * RCVD AT 2/28/2007 5:02:05 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-2/22 * DNIS:2738300 * CSID:609 734 6888 * DURATION (mm-ss):12-42

wobble signal (WS) and the reference signal (RS) (*see*, FIG. 2 and the specification at page 2, line 33 to page 3, line 5).

Ko et al. discloses a method for detecting a wobble signal of an optical disc (*see*, Ko et al. at column 1, lines 20-25). In Ko et al., an input signal including the wobble signal is compared with the input signal itself and output as an output signal indicating the amplitude and phase of the wobble signal (*see*, Ko et al. at FIG. 11 and column 12, lines 13-57). The comparing step includes generating a sum signal and a difference signal of the input signal (*see*, Ko et al. at FIG. 11 and column 12, lines 20-24).

Ko et al. does not describe or suggest a method for detecting a wobble signal of an optical disk in which an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal, wherein the comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS). Rather, Ko et al. describes an arrangement in which each half of the detector receives a superposition of a modulated portion and a reference portion. As indicated in Ko et al. at column 7, lines 36-50, when the wobble signals in both walls are in-phase a wobble signal is detected from the difference signal. In contrast, when the wobble signals in both walls are 180^0 out of phase a wobble signal is detected from the sum signal. As can be seen in Ko et al. in FIGs. 12a-12c, when the wobble signals in both walls are 180^0 out of phase and the wobble signal is detected from the sum signal, the difference signal is equal to zero and is not usable as a carrier signal. This means that it does not correspond in phase and amplitude to the desired wobble signal recited in applicant's claim 1. In fact, only the sum of the sum signal coming from 204 and the difference signal coming from 202 corresponds to the input signal as

described in present claim 1. This signal is compared with a reference signal by multiplication with a multiplier (*see*, Ko et al. at column 12, lines 29-45). Therefore, Ko et al. describes exactly the prior art solution. Furthermore, even if the outputs of the photodetector 200 were considered to deliver an input signal and a reference signal, nowhere does Ko et al. disclose to compare the amplitudes of the sum signal and the difference signal. Even though the difference signal corresponds to a comparison of the amplitudes of the input signal and the reference signal, in FIG. 11 it can be clearly seen that the sum signal and the difference signal are only added by the adder 210. This does not allow any comparison of the amplitudes. Thus, claim 1 is patentable over Ko et al.

Claims 3, 6, 11/1, 11/ 3 and 11/6 depend directly, or indirectly, from claim 1. For the same reasons as stated above for claim 1, claims 3, 6, 11/1, 11/3 and 11/6 are also patentable over Ko et al.

B. 35 U. S. C. § 103

1. Claims 1, 3-4, 6, 8, 11/1, 11/3, 11/4, 11/6 and 11/8 are not obvious over Aoki in view of Yoshimura et al.

Claims 1, 3-4, 6, 8, 11/1, 11/3, 11/6 and 11/6 stand rejected under 35 U. S. C. § 103(a) as being unpatentable over Aoki (U. S. Patent 6,201,773 issued March 13, 2001) in view of Yoshimura et al. (U. S. Patent 6,100,724 issued August 8, 2000). The applicants submit that these claims are not rendered obvious by the combination of these references.

Claim 1 is directed to a method for detecting a wobble signal of an optical disk (*see*, specification at page 1, lines 6-9). In the method, a reference signal corresponding in phase and frequency to the desired wobble signal is generated (by the PLL circuit 212) and then an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS)

corresponding in phase and frequency to the desired wobble signal (*see*, FIG. 2 and the specification at page 2, lines 23-27) and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal (*see*, FIG. 2 and the specification at page 2, lines 27-29). The comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS) (*see*, FIG. 2 and the specification at page 2, line 33 to page 3, line 5).

Aoki discloses a method for detecting a wobble signal of an optical disc (*see*, Aoki at column 2, lines 32-34). In Aoki, an input signal including the wobble signal is compared with a delayed input signal as a reference signal and output as an output signal indicating the amplitude and phase of the wobble signal (*see*, Aoki at FIG. 8 and column 9, lines 11-34). The comparing step includes multiplying the input signal with the delayed input signal (*see*, Aoki at FIG. 8 and column 9, lines 34-36).

Aoki does not describe or suggest a method for detecting a wobble signal of an optical disk in which an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal, wherein the comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS). Rather, Aoki describes a different method in which an input signal including the wobble signal is compared with a delayed input signal as a reference signal and output as an output signal indicating the amplitude and phase of the wobble signal, wherein the comparing step includes multiplying the input signal with the delayed input signal. In Aoki, the delayed input signal does

not correspond in phase and frequency to the desired wobble signal. As can be seen in FIG. 1 of Aoki, the wobble signal has sections with an inverted phase. This means that if the delayed wobble signal is used as a reference signal there are sections where the reference signal is 180^0 out of phase with the desired wobble signal. Consequently, contrary to applicant's claim 1, no reference signal is generated corresponding in phase and frequency to the desired wobble signal. Thus, claim 1 is patentable over Aoki.

Yoshimura et al. discloses a digital signal reproducing circuit (*see*, Yoshimura et al. at column 1, lines 6-10). The digital signal reproducing circuit compares a signal to a delayed signal to detect a phase difference (*see*, Yoshimura et al. at FIGS. 3-4 and column 5, lines 8-11). However, this phase difference does not indicate the phase difference between the input signal and the delayed input signal. In Yoshimura et al. at column 4, lines 13-14, the phase difference is the phase difference between the input signal and the synchronous clock used for sampling the input signal. Further, in Yoshimura et al., the description of FIG. 3, as the D-flip-flop 21 is driven by the synchronous clock, the phase difference between the input signal and the delayed input signal is always the same. It is determined by the frequency of the synchronous clock. Finally, though Yoshimura et al. discloses generating a sum signal and a difference signal, nowhere do they give a hint to compare the amplitudes of the sum signal and the difference signal. In Yoshimura et al. in FIGS. 3-4 and column 4, lines 55-62, the amplitudes are used for normalization, but they are not compared.

Yoshimura et al. does not describe or suggest a method for detecting a wobble signal of an optical disk in which an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal, wherein the comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal

(S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS). Rather, Yoshimura et al. only discloses a digital signal reproducing circuit that compares a signal to a delayed signal to detect a phase difference. Thus, claim 1 is patentable over Yoshimura et al.

Furthermore, since Aoki only describes a method in which an input signal including the wobble signal is compared with a delayed input signal as a reference signal and output as an output signal indicating the amplitude and phase of the wobble signal, wherein the comparing step includes multiplying the input signal with the delayed input signal and Yoshimura et al. only discloses a digital signal reproducing circuit that compares a signal to a delayed signal to detect a phase difference, the combination of these references does not describe or suggest applicant's method as recited in claims 3-4 and 6. In particular, claims 3-4 and 6 recite a method for detecting a wobble signal of an optical disk in which an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal, wherein the comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS). Thus, claim 1 is patentable over the combination of these references.
Claims 3, 6, 8 11/1, 11/ 3, 11/6 and 11/8 depend directly, or indirectly, from claim 1. For the same reasons as stated above for claim 1, claims 3, 6, 8, 11/1, 11/3, 11/6 and are also patentable over Aoki in view of Yoshimura et al.

2. Claims 1, 9, 11/1 and 11/9 are not Maegawa et al. in view Ko et al.

Claims 1, 9, 11/1 and 11/9 stand rejected under 35 U. S. C. § 103(a) as being unpatentable over Maegawa et al. (U. S. Patent 6,345,018 issued February

2, 2002) in view of Ko et al. (U. S. Patent 6,671,238 issued December 30, 2003). The applicants submit that these claims are not rendered obvious by the combination of these references.

Claim 1 is directed to a method for detecting a wobble signal of an optical disk (*see*, specification at page 1, lines 6-9). In the method, a reference signal corresponding in phase and frequency to the desired wobble signal is generated (by the PLL circuit 212) and then an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal (*see*, FIG. 2 and the specification at page 2, lines 23-27) and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal (*see*, FIG. 2 and the specification at page 2, lines 27-29). The comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS) (*see*, FIG. 2 and the specification at page 2, line 33 to page 3, line 5).

Maegawa et al. describes a method for detecting a wobble signal by generating a reference signal corresponding in phase and frequency to the desired wobble signal (by the carrier-wave generation circuit 15), comparing an input signal comprising the wobble signal with the reference signal, and outputting an output signal indicating the amplitude and phase of the wobble signal.

Ko et al. discloses a method for detecting a wobble signal of an optical disc (*see*, Ko et al. at column 1, lines 20-25). In Ko et al., an input signal including the wobble signal is compared with the input signal itself and output as an output signal indicating the amplitude and phase of the wobble signal (*see*, Ko et al. at FIG. 11 and column 12, lines 13-57). The comparing step includes generating a sum signal and a difference signal of the input signal (*see*, Ko et al. at FIG. 11 and column 12, lines 20-24).

Neither, Maegawa et al. or Ko et al. describe or suggest a method for detecting a wobble signal of an optical disk in which an input signal (IS) including the wobble signal (WS) is compared with a reference signal (RS), the reference signal (RS) corresponding in phase and frequency to the desired wobble signal and then output as an output signal (OS) indicating the amplitude and the phase of the wobble signal, wherein the comparing step includes generating a sum signal (S1) and a difference signal (S2) of the input signal (IS) and the reference signal (RS) and comparing the amplitudes of the sum signal (S1) and the difference signal (S2) to obtain the relative phase between the wobble signal (WS) and the reference signal (RS). Rather, Ko et al. describes an arrangement in which each half of the detector receives a superposition of a modulated portion and a reference portion. As indicated in Ko et al. at column 7, lines 36-50, when the wobble signals in both walls are in-phase a wobble signal is detected from the difference signal. In contrast, when the wobble signals in both walls are 180^0 out of phase a wobble signal is detected from the sum signal. As can be seen in Ko et al. in FIGs. 12a-12c, when the wobble signals in both walls are 180^0 out of phase and the wobble signal is detected from the sum signal, the difference signal is equal to zero and is not usable as a carrier signal. This means that it does not correspond in phase and amplitude to the desired wobble signal recited in applicant's claim 1. In fact, only the sum of the sum signal coming from 204 and the difference signal coming from 202 corresponds to the input signal as described in present claim 1. This signal is compared with a reference signal by multiplication with a multiplier (*see*, Ko et al. at column 12, lines 29-45). Therefore, Ko et al. describes exactly the prior art solution. Furthermore, even if the outputs of the photodetector 200 were considered to deliver an input signal and a reference signal, nowhere does Ko et al. disclose to compare the amplitudes of the sum signal and the difference signal. Even though the difference signal corresponds to a comparison of the amplitudes of the input signal and the reference signal, in FIG. 11 it can be clearly seen that the sum signal and the difference signal are only added by the adder 210. This does not

RECEIVED
CENTRAL FAX CENTER
FEB 2 8 2007

allow any comparison of the amplitudes. Thus, claim 1 is patentable over Ko et al.

Claims 9, 11/1 and 11/ depend directly, or indirectly, from claim 1. For the same reasons as stated above for claim 1, claims 9, 11/1, and 11/9 are also patentable over Maegawa et al. and Ko et al.

CONCLUSION

Thus, the applicants submit that none of the claims presently in the application are anticipated under the provisions of 35 U. S. C. § 102, or rendered obvious under the provisions of 35 U. S. C. § 103. Consequently, the applicants believe that all of the claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner telephone Ms. Patricia A. Verlangieri, at (609) 734-6867, so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

Patricia A. Verlangieri

Patricia A. Verlangieri, Attorney
Reg. No. 42,201
(609) 734-6867

Patent Operations
Thomson Inc.
P. O. Box 5312
Princeton, New Jersey 08543-5312

February 28, 2007